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#### SPECIFICATION

1. Title of the Invention: AUTO-GENERATION NAME MANAGEMENT  
METHOD

2. Claim

An auto-generation name management method, based on a front character list of auto-generation names determined on a per data item type basis, a serial number management table for managing, on a per data item type basis, serial number information representing whether a serial number uniquely attached to the front character of the auto-generation name is used or unused, and a mask pattern list of the data item types for use in referencing only the serial number information belonging to a particular data item type in the serial number management table, the method comprising, in an

initialization process, referencing the front character list, detecting the data item type using the same front character, representing, by a single mask pattern, mask patterns, in the mask pattern list, corresponding to the data item types using the same front character, adopting mask patterns, in the mask pattern list, corresponding to data item types from which the same front character is not detected, and thereby producing a new mask pattern table, and

in a process of referencing the serial number management table, using a mask pattern in the mask pattern table produced in the initialization process.

### 3. Detail Description of the Invention

#### (Summary)

The present invention relates an auto-generation name management method of managing data items, etc. in a data processing system.

It is an object of the present invention to eliminate the need for multiple referencing of a serial number management table in accordance with different mask patterns if a plurality of data items having the same front character are present in the reference of the serial number management table for use in an auto-generation name management.

The auto-generation name management method, based on a front character list of auto-generation names determined on

a per data item type basis, a serial number management table for managing, on a per data item type basis, serial number information representing whether a serial number uniquely attached to the front character of the auto-generation name is used or unused, and a mask pattern list of the data item types for use in referencing only the serial number information belonging to a particular data item type in the serial number management table. The method includes, in an initialization process, referencing the front character list, detecting the data item type using the same front character, representing, by a single mask pattern, mask patterns, in the mask pattern list, corresponding to the data item types using the same front character, adopting mask patterns, in the mask pattern list, corresponding to data item types from which the same front character is not detected, and thereby producing a new mask pattern table, and in a process of referencing the serial number management table, using a mask pattern in the mask pattern table produced in the initialization process.

[Technical Field of the Invention]

The present invention relates to an auto-generation name management method for managing a data item or the like in a data processing system. In particular, the present invention provides management means for efficiently managing serial numbers when a front character of a generated name

can be designated in duplication while numbers (serial numbers) are automatically assigned to a plurality of remaining characters in an unduplicate manner.

[Description of the Related Art]

A data processing system identifies individual data items to manage and process, by type, the data items displayed on a process screen, and performs an assignment process to assign an auto-generation name (also referenced as an automatically generated name) to the individual data item.

- (1) Input and output item: Rmmmm
- (2) Output item: Wmmmm
- (3) Key mat item: Kmmmm
- (4) Fixed literal: Fmmmm
- (5) Other items: Smmmm
- (6) Mass item: MASmmmm
- (7) Item group: GRPmmmm

The auto-generation names of the data item types (1)-(5) have a fixed alphabet as a front character, followed by three digit numerals mmm. Here, mmm is a unique number within a range from 001 through 999.

Each of the data item types of (6) and (7) is three characters and three digit numerals mmm.

The front character of each data item is shared. For example, the auto-generation name of the data item type (2)

can be the front character R of the auto-generation name of the data item type (1) instead of the front character W. Similarly, the auto-generation name of the data item type (7) may be the front characters MAS of the auto-generation name of the data item type (6) instead of the front characters GRP.

To uniquely manage the auto-generation names of the data items, a serial number management table of a bit map format of Fig. 3 is used.

The serial number management table of Fig. 3 lists assigned state and unused state, represented by 1 and 0, of the data item types (1)-(7) of the serial numbers 001-999 for use as three digit numerals mmm.

When a new auto-generation name is assigned to data item, only information of the corresponding data item type in the serial number management table is referenced, and one of unused numbers is selected and assigned.

Since only information of the corresponding data item type in the serial number management table is referenced, a mask pattern of Fig. 4 is produced. In the mask pattern, a column of the data item type to be referenced has "1", and other columns has "0".

Fig. 5 illustrates a process flow of a known auto-generation name method using a serial number management table and a mask pattern.

The process flow is briefly described below.

In step (1), the process starts. In step (2), a process request is issued. The content of the process is identified, and a next function call is performed depending on the identification result. If the request is a name assignment to the data item (auto-generation), an assignment process function for step (3) and subsequent steps are called, and then executed. If the request is a name release, a release process function for step (6) and subsequent step are called, and then executed. If the request is a name registration, a registration process function for step (8) and subsequent step are called, and then executed.

In the assignment process of (3), the serial number management table is checked using a mask pattern corresponding to a target data item and using a mask pattern of other data item types that has the same front character as the target data item, thereby possibly resulting in the same name or the same pattern, and one empty serial number with a bit value "unused" in the column of each data item type is selected.

In step (4), the selected empty serial number is combined with a predetermined front character to generate a name.

In step (5), as for the empty serial number used in step (4), the display of the bit value in each column that

may cause the same name pattern in the serial number management table is updated as being "used".

In the release process in step (6), a serial number is pulled out of a name to be released.

In step (7), the display of all bit values of the column of the serial number, obtained in step (6), in the serial number management table is updated as being "unused", using a mask pattern of the data item type having the same front character that may generate the same name pattern as the name to be released.

In the registration process (8), a serial number is pulled out of a name to be registered.

In step (9), the display of all bit values of the column of the serial number, obtained in step (8), in the serial number management table is updated as being "used", using a mask pattern of the data item type having the same front character that may generate the same name pattern as the name to be registered.

[Problem to be Solved by the Invention]

Duplicate generation of the same name pattern must be prevented in the empty serial number assignment using the bit-map format serial number management table, the release of the used serial number, and the registration of the used serial number. In the known auto-generation name management method, the data item type having the same front character

is checked at each process, the serial number management table is referenced in accordance with the mask pattern different by type, and the bit value in the corresponding column needs to be read or updated. Process of the known method is thus time consuming.

Even a plurality of data item types having the same front character are present when the serial number management table for use in the auto-generation is referenced. The present invention eliminates the need for multiple referencing of the serial number management table in accordance with different mask patterns, facilitates the process, and shortens the process time.

(Means for Solving the Problems)

In accordance with the present invention, a mask pattern table collecting mask patterns for referencing the serial number management table on a per data item type is produced in an initialization process, and data item types having the same front characters are tagged with the same mask pattern. Serial number information is thus consistently managed, and a single table referencing permits process check and updating.

Fig. 1 illustrates the principle of the present invention.

As shown in Fig. 1, a front character list 1 of auto-generation names lists front characters designated by item



type. In the example of Fig. 1, an input and output item and a key mat item use the same front character "R". A mass item and an item group use the same front characters "GRP".

A mask pattern list 2 lists mask patterns uniquely designated on a per data item type to reference the serial number management table. The example of the mask pattern is represented in a hexadecimal format, and designates the position of a particular bit in the serial number management table.

In an initialization process 3, a front character list 1 is referenced to detect data item types having the same front characters, and the mask patterns in a mask pattern list 2 is represented by a single mask pattern. When the data item type having the same front characters is detected in the example shown, the mask pattern of an upper data item type is substituted for the mask pattern of a lower data item type to produce a mask pattern table.

In a mask pattern table 4, a single mask pattern is assigned to the data item types having the same front character.

A serial number management table 5 of a bit-map format lists serial number information containing the serial numbers mmm (001-999) with used state or unused state thereof identified by the bit value. If a plurality of data item types having the same front character are present, only

a single column bit selected by a single mask pattern commonly used among the plurality of data item types is set as being valid.

In an assignment process 6, the serial number management table 5 is referenced using a mask pattern retrieved from the mask pattern table 4 in accordance with the type of the data item for generating the name, and the empty serial number is selected, and the bit of the empty serial number is set to on.

In a release process 7, the serial number management table 5 is referenced using a mask pattern retrieved from the mask pattern table 4 in accordance with the type of the data item of the name, the release of which is requested, and the corresponding bit is set to off.

In a registration process 8, the serial number management table 5 is referenced using a mask pattern retrieved from the mask pattern table 4 in accordance with the type of the data item of the name, the registration of which is requested, and the corresponding bit is set to on.  
(Operation)

In accordance with the present invention, the mask patterns are represented by a common mask pattern even if auto-generation names of the plurality of data item types have the same front character. When the serial number management table is referenced in the serial number

assignment, the release of the serial number, and the registration of the serial number, the user does not need to pay attention to the mask pattern of another data item type having the same front character. A single table reference process is thus sufficient.

In the example of Fig. 1, the front character list 1 of the auto-generation name is set up so that both the input and output item and the key mat item have the auto-generation name of the front character "R".

In the mask pattern list 2, the mask pattern of the input and output item "0010" (hexadecimal) is different from the mask pattern of the key mat item "0004" (hexadecimal). In the initialization process 3, these mask patterns are set in the mask pattern table 4 of upper input and output item.

The serial number management table 5 is referenced using the same mask pattern "0010" (hexadecimal) when each of the input and output item and the key mat item is processed in the assignment process 6, the release process 7, and the registration process 8.

The column (bit position) designated by "0010" (hexadecimal) of the serial number management table is thus used commonly by the input and output item and the key mat item, and the column designated by "0004" (hexadecimal) is unused and remains blank.

The management of the auto-generation names having the

same front character is facilitated, and the process thereof is sped up.

(Embodiments)

Fig. 2 illustrates a process flow of an auto-generation name management method of one embodiment of the present invention. Process steps represented by (11) through (20) are described below with reference to Fig. 1.

With the process starting in step (11), an initialization step (12) is performed.

In initialization step (12), the front character list 1 and the mask pattern list 2 are referenced to check the presence or absence of the same front character to produce the mask pattern table 4.

If a process request is issued in step (13), the content of the request is identified. Depending on the result, one of the assignment process, the release process, and the registration process is called.

In the assignment process, in step (14), the serial number management table 5 is referenced using the mask pattern retrieved from the mask pattern table 4 (a common mask pattern if another data item type having the same front character is present), and an empty serial number is searched for in the serial number information.

In step (15), the front characters corresponding to the empty serial numbers found in step (14) are combined and a

number is generated.

In step (16), the serial number information on the serial number management table 5 corresponding to the empty serial numbers used in step (15) is set as being "used", and processing returns to step (13).

In the release process, in step (17), a serial number is pulled out of a name to be released.

In step (18), the serial number management table 5 is referenced using the serial number pulled out in step (17) and the mask pattern retrieved from the mask pattern table 4 (the common mask pattern if another data item type having the same front character is present), and the corresponding serial number is set as being "unused" and processing returns to step (13).

In the registration process, in step (19), a serial number is pulled out of a name to be registered.

In step (20), the serial number management table 5 is referenced using the serial number pulled out in step (19) and the mask pattern retrieved from the mask pattern table 4 (the common pattern if another data item type having the same front character is present), and the corresponding serial number information is set as being "used", and processing returns to step (13).

The above operation is repeated in response to each process request. One mask pattern of the same mask pattern

table 4 is used each time.

(Advantages)

In accordance with the present invention, the serial number management table is referenced using the same mask pattern among the data item types that may have the same auto-generation name. The user is freed from paying attention to duplication of the auto-generation name among other data item types. The logic of a process program is simplified, and the process time is shortened.

#### 4. Brief Description of the Drawings

Fig. 1 illustrates the principle of the present invention, Fig. 2 is a process flow chart of the auto-generation name management method of the embodiment of the present invention, Fig. 3 illustrates the serial number management table, Fig. 4 illustrates the mask pattern, and Fig. 5 illustrates the process flow chart of the known auto-generation name management method.

In Fig. 1,

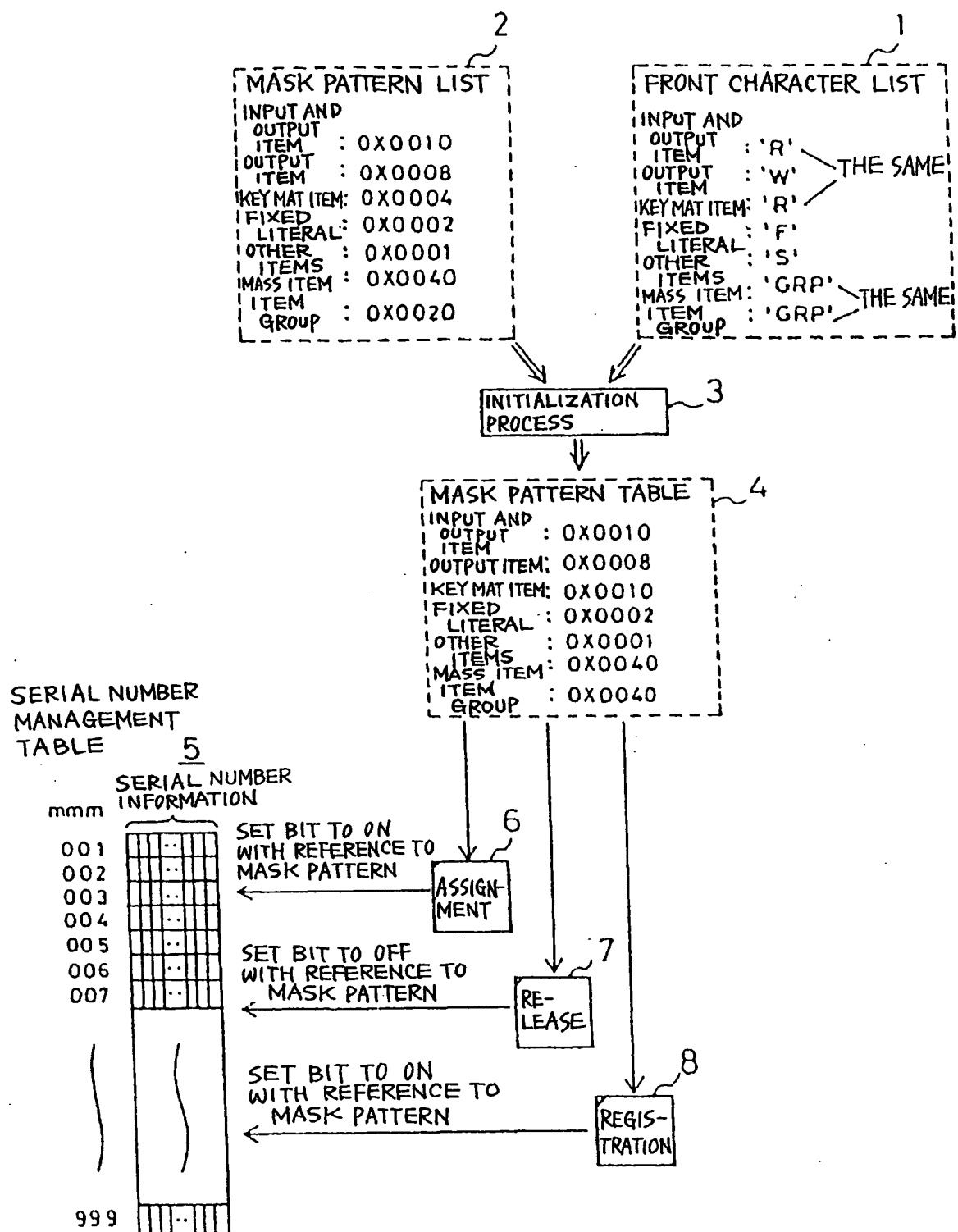
- 1: front character list
- 2: mask pattern list
- 3: initialization process
- 4: mask pattern table
- 5: serial number management table
- 6: assignment process

7: release process

8: registration process

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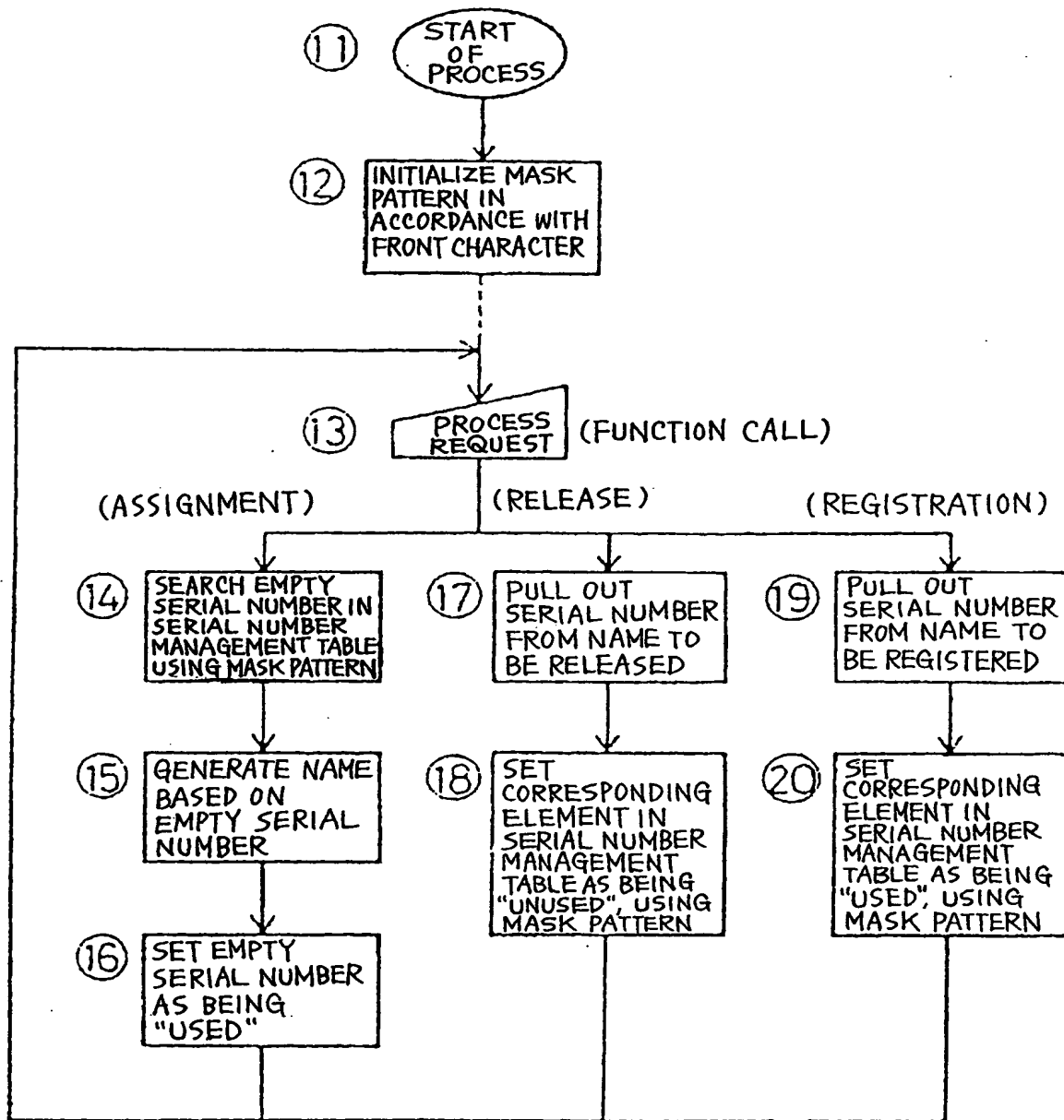
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PRINCIPLE OF THE PRESENT INVENTION

FIG. 1





PROCESS FLOW CHART OF AUTO-GENERATION NAME MANAGEMENT METHOD

SERIAL NUMBER										INPUT AND
				(7) ITEM GROUP	(6) MASS ITEM	(5) OTHER ITEMS	(4) FIXED LITERAL	(3) KEY MAT ITEM	(2) OUTPUT ITEM	(1) OUTPUT ITEM
0	0	1	-----	1	0	0	1	0	1	1
0	0	2	-----	1	0	0	0	0	1	1
0	0	3	-----	1	0	0	0	1	0	0
9 9 9										0
9	9	9		0	0	0	0	0	0	0

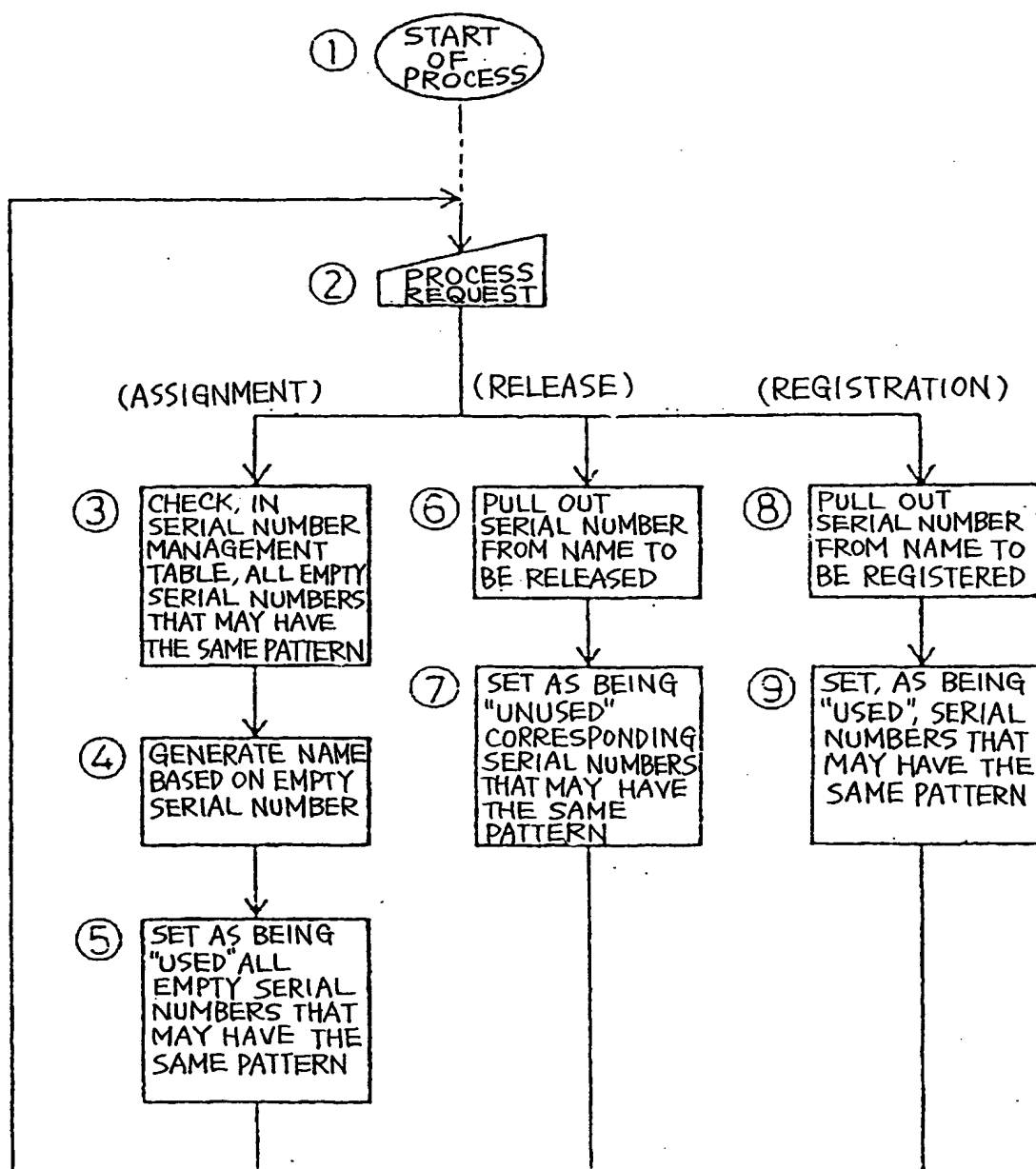
CHART OF SERIAL NUMBER MANAGEMENT  
TABLE

FIG. 3

(7)	(6)	(5)	(4)	(3)	(2)	(1)
-----	0	0	0	0	0	1

CHART OF MASK PATTERN

FIG. 4



PROCESS FLOW CHART OF AUTO-GENERATION NAME  
MANAGEMENT METHOD OF KNOWN ART